Spaced Repetition and the Forgetting Curve

Forgetting is normal, and it follows a pattern. In 1885, the German psychologist Hermann Ebbinghaus published research on memory in which he tested himself on lists of meaningless syllables. These syllables gave him a clean way to measure how fast new information fades. His results gave us the idea of the forgetting curve, and spaced repetition is the practical answer: reviewing information at planned, growing intervals. We follow Hind, a new customer-support agent, as she learns product facts.

1. The Forgetting Curve

The forgetting curve shows that memory drops quickly soon after learning, and then more slowly. Without any review, a large part of new information can be lost within days. The exact speed depends on how meaningful the material is, how well we learned it and how tired we are. Ebbinghaus also found that relearning something we had forgotten takes less effort than learning it the first time.

Example: A traveller learns twenty phrases on the plane to a new country. By the end of the week, only a few remain clear, which is the forgetting curve at work: a quick drop first, then a slower one. A quick review on the second day would have kept many more phrases alive.

At work: Hind studies product facts for three hours the night before training. A week later, she cannot answer a customer's question, which is the forgetting curve at work. She realises that one long session is not enough to keep the information.

2. Why Spacing Works

The spacing effect means that learning is stronger when reviews are spread over time than when they are packed into one session, and decades of research support this. Cramming may help for tomorrow's test, but the information fades quickly afterwards. Each review that comes just as we start to forget is a small effort that strengthens the memory. After each such review, the memory lasts longer, so the curve becomes flatter.

Example: Two friends learn a poem. One reads it ten times in one evening, and the other reads it twice a day for five days. The second friend uses spacing: short reviews over several days. Weeks later, the second friend usually remembers more of the poem.

At work: Hind reviews her product facts for ten minutes on the second day, instead of repeating everything in one night. She uses spacing: each review comes just as the facts start to fade. By the end of the week, the facts feel familiar.

3. Build a Review Schedule

A simple review schedule uses growing gaps, for example a review after one day, then three days, then one week and then one month. Each successful review lets us wait longer before

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the next one. Facts we forget go back to a shorter interval, so our time goes where it is needed. The exact gaps matter less than the habit of reviewing on a plan, and calendars or apps can send reminders.

Example: A language learner plans reviews of new words after one day, three days and one week. The learner follows the review schedule and ticks each date in a calendar. After a month, most of the words come easily.

At work: Hind puts her product facts on a schedule: a review after one day, three days and one week. When she forgets a fact, she moves it back to the one-day review. After a month, she answers most customer questions without checking her notes.

4. Recall, Do Not Reread

Research on the testing effect suggests that reviewing works best when we test ourselves instead of simply rereading. Active recall means trying to remember an answer before checking it, for example with a flashcard that has a question on one side and the answer on the other. Rereading feels easy and familiar, but familiarity can trick us into thinking that we know something. Short, simple cards, with one idea each, make spaced repetition quick to do.

Example: A medical student writes a question on one side of a card and the answer on the other, and tries to answer before turning it over. This is active recall: the effort of remembering strengthens the memory. Rereading the textbook would have felt easier, but it often teaches less.

At work: Hind makes one flashcard for each product fact and answers each one aloud before looking. She uses active recall and moves the cards she misses to the next day's pile. Her answers get faster, and customers notice her confidence.

Conclusion

In summary, Hermann Ebbinghaus showed in 1885 that memory fades quickly at first and then more slowly. Spaced repetition answers this by reviewing information just as we begin to forget it, with growing gaps. We plan a review schedule and use active recall, with short cards. Together, they turn a rushed night of study into knowledge that lasts.

Sources

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